

Sale by Mutual Agreement of the Minister Examples

**Québec cap-and-trade system for
greenhouse gas emission allowances**

Updated on August 3, 2018

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I. BACKGROUND

This document provides information and examples of how to determine the amount of a bid guarantee, how holding limits are applied, and examples of sale by mutual agreement of the Minister bid fulfillment and purchase determinations. This attachment also clarifies how submitted bids that contain bid quantities in excess of the holding limit or that have a maximum value greater than the bid guarantee will be handled. The currency used in sales by mutual agreement is Canadian dollars.

Only emitters registered in the CITSS system in accordance with the Québec regulation whose general account does not contain any emission units that can be used to cover GHG emissions for the current compliance period are eligible for a sale of emission units by mutual agreement.

This document is guidance only and does not supersede the Québec Cap-and-Trade Regulation (Québec Regulation). In circumstances of uncertainty, the Québec Regulation is the controlling document.

When bidding in a sale by mutual agreement of the Minister during the open bidding window, the category and number of bid lots are entered for each bid. The bid fulfillment and purchase determinations in a sale by mutual agreement of the Minister are determined after the bidding window is closed based on the following steps:

- Each entity's submitted bids are evaluated to ensure that submitted bids or value of submitted bids do not exceed the current vintage holding limits or the entity's bid guarantee.
- Each entity's qualified bids are determined as the bid quantity that remains after the submitted bids have been evaluated and reduced to meet all limits.
- Qualified bids are determined in each category.
- When the total offers submitted by a purchaser exceed the purchaser's holding limit or exceed the value of the financial guarantee submitted, the excess lots will be removed from the purchaser's offers beginning with the offers made at the lowest price.
- Once all bids are evaluated, bids are filled in each category until the entire supply of allowances in the category is exhausted or all qualified bids have been filled.

The discussion in the remainder of the document follows the steps listed above, in order, to discuss the various elements of the bid fulfillment and purchase determinations process.

II. DETERMINING AN ENTITY'S BID GUARANTEE

Table 1 presents hypothetical bid submissions for a sale by mutual agreement of the Minister in which three entities are participating. Each row in Table 1 provides the bid value at each category price. The Auction and Sale by Mutual Agreement of the Minister Administrator (Auction Administrator)¹ will accept bids for lots of allowances; each bid lot representing 1,000 allowances.

Table 1: Sale by Mutual Agreement of the Minister Bid Submissions

| Entity Name | Category | Category Price | Bid Lots | Bid Number of Allowances | Bid Value | Entity Cumulative Bid Allowances ² | Entity Cumulative Bid Value |
|-------------|----------|----------------|----------|--------------------------|--------------|---|-----------------------------|
| Entity 1 | A | \$53.38 | 100 | 100,000 | \$5,338,000 | 900,000 | \$56,705,000 |
| Entity 1 | B | \$60.04 | 300 | 300,000 | \$18,012,000 | 800,000 | \$51,367,000 |
| Entity 1 | C | \$66.71 | 500 | 500,000 | \$33,355,000 | 500,000 | \$33,355,000 |
| Entity 2 | A | \$53.38 | 300 | 300,000 | \$16,014,000 | 1,550,000 | \$96,066,500 |
| Entity 2 | B | \$60.04 | 500 | 500,000 | \$30,020,000 | 1,250,000 | \$80,052,500 |
| Entity 2 | C | \$66.71 | 750 | 750,000 | \$50,032,500 | 750,000 | \$50,032,500 |
| Entity 3 | A | \$53.38 | 50 | 50,000 | \$2,669,000 | 350,000 | \$22,015,000 |
| Entity 3 | B | \$60.04 | 100 | 100,000 | \$6,004,000 | 300,000 | \$19,346,000 |
| Entity 3 | C | \$66.71 | 200 | 200,000 | \$13,342,000 | 200,000 | \$13,342,000 |

Table 1 Terminology:

- *Bid Number of Allowances* = Bid Lots * 1,000
- *Bid Value* = Bid Number of Allowances * Category price
- *Entity Cumulative Bid Value* = Sum of Bid Value at Category Price and all other Category Prices
- *Entity Cumulative Bid Allowances* = Sum of Bid Number of Allowances in Category and Bid Number of Allowances at each other-price Category.
- *Entity Maximum Bid Value* = Entity Cumulative Bid Value considering all three categories

¹ For simplicity, the Auction and Sale by Mutual Agreement of the Minister Administrator is referred to as the Auction Administrator in all notices regarding auctions and sale by mutual agreement of the Minister.

² Cumulative value presented in the table is shown to reflect how the algorithm evaluates the submitted bids by an entity. The algorithm evaluated the bids submitted in Category C first so that bids in excess are removed from the lowest priced Category first.

The Québec Regulation require bid guarantees to be greater than or equal to the maximum value of the bids submitted (i.e., maximum bid value). Thus, each entity's bid guarantee should be equal to or greater than the maximum bid value for the planned bid schedule in Table 1. Entities bidding in a sale by mutual agreement of the Minister will be limited to incurring a total cost less than or equal to the dollar amount of the bid guarantee submitted and should evaluate their bids against the bid guarantee they provided in the manner illustrated in the examples below.

Entities submit a bid guarantee that is used first to satisfy purchases in the highest-priced category. Any portion of the bid guarantee remaining after the highest-priced category purchases are satisfied is subsequently applied to lower-priced categories in succession until either all available allowances are sold or all qualified bids are filled. By evaluating the bids in that order, the Auction Platform effectively remove from the lowest-priced category any bids that exceed the bid guarantee or the holding limit.

The following are examples of how an entity might calculate the minimum bid guarantee required to avoid having their bids rejected:

Example 1: Calculating a Bid Guarantee When Submitting Multiple Bids

As shown in Table 1, Entity 1 has submitted one bid in each of the three categories. The sale may result in the complete fulfilment of the entity's bid schedule. Thus, the bid guarantee that Entity 1 should submit to avoid having bids rejected is the sum of the entity's bids.

- Category A: Entity 1 bid for 100,000 emissions units at a cost of \$5,338,000;
- Category B: Entity 1 bid for 300,000 emissions units at a cost of \$18,012,000;
- Category C: Entity 1 bid for 500,000 emissions units at a cost of \$33,355,000 \$.

Entity 1's bid schedule shows that it is willing to purchase a total of 900,000 emissions units at a total bid value of \$56,705,000. **Entity 1 should submit a bid guarantee of at least \$56,705,000 if it wants to buy all the emissions units in its bid schedule.**

As indicated in the Québec Regulation, when the total offers submitted by a purchaser exceed the purchaser's holding limit or exceed the value of the financial guarantee submitted, the excess lots will be removed from the purchaser's offers beginning with the offers made at the lowest price. Therefore the bid guarantee will first be used to cover the cost for emission units purchased from the category C. Moving from the highest priced category to the lowest priced category, bids are filled in each category until the entire supply of allowances in the category is exhausted or all qualified bids have been filled.

The minimum bid guarantee Entities 1, 2, and 3 should submit to avoid having their bid(s) rejected in bundles of 1,000 emissions units by the Auction Administrator would be as follows:

Entity 1 – \$56,705,000;

Entity 2 – \$96,066,500;

Entity 3 – \$22,015,000.

III. ENTITY BID EVALUATION PROCEDURES FOR PURCHASE LIMITS AND HOLDING LIMITS

A. Purchase Limits

There is no purchase limit applied to the purchase of allowances offered in a sale by mutual agreement of the Minister.

B. Holding Limits

The holding limit is the maximum number of allowances an entity may hold or the maximum number of allowances that may be jointly held by a group of entities that are members of a Corporate Association Group (CAG). The holding limit applies to all entities across all linked jurisdictions.

The holding limit formula for California, Québec, and Ontario is based on the following formula³:

$$\text{Holding Limit} = 2,500,000 + 0.025 * (\text{Annual Allowance Budget} - 25,000,000)$$

Where:

- “Annual Allowance Budget” is the number of allowances issued for the current budget year⁴.

For 2018, the combined annual budget in California, Québec, and Ontario is 553,700,000 allowances.

$$\begin{aligned} \text{Holding Limit} &= 2,500,000 + 0.025 * (553,700,000 - 25,000,000) \\ \text{2018 Holding Limit} &= 15,717,500 \text{ allowances} \end{aligned}$$

During a sale by mutual agreement of the Minister, the holding limit reflects the number of

³ Pursuant to Section 95920(d)(1) of the California Regulation and Article 32 of Québec Regulation, the formula is $\text{Holding Limit} = 0.1 \times \text{Base} + 0.025 \times (\text{Annual Allowance Budget} - \text{Base})$, where “Base” equals 25 million metric tons of CO₂e. This has the same mathematical result as the formula as listed above.

⁴ The annual allowance budget in a linked program includes allowances issued by participating jurisdictions.

emissions units an entity holds in its account(s) plus its limited exemption, if applicable. In addition, the holding limit is subject to the current vintage holding limit calculated for the current budget year. The holding limit, the available holding limit (holding limit minus account balance(s)), and the limited exemption for each emitter, if applicable, can be viewed in entities' CITSS accounts under the "Holding Limit" tab on the "Account Details" page.

Entities can calculate the maximum number of allowances they can hold using Example 2.

Example 2: Determining the Maximum Number of Allowances an Entity Can Hold and Purchase to Comply with the Holding Limit

The maximum number of allowances an entity can hold at one time equals the holding limit plus the limited exemption. For allowances to be counted towards an entity's limited exemption, they must be held in the entity's compliance account. Assuming an entity takes full advantage of the limited exemption, in 2018 the maximum number of allowances that may be held is calculated as:

$$\text{2018 Maximum Number of Allowances Held Subject to Current Vintage Holding Limit} = 15,717,500 + \text{Limited Exemption}$$

When submitting bids in a sale by mutual agreement of the Minister, an entity may not exceed the applicable holding limit, which is the current vintage holding limit. Suppose an entity's limited exemption is equal to 4,000,000 allowances and it holds 1,000,000 allowances in its compliance account. In this case, the maximum number of allowances the entity can hold and stay below the holding limit is:

$$\text{Maximum Number of Current Vintage Allowances Held} = 15,717,500 + 4,000,000 - 1,000,000 = 18,717,500 \text{ allowances.}$$

Entities can hold more allowances in their compliance account than allowed under the limited exemption, but any allowances in excess of the limited exemption will count towards the holding limit. If the entity in the prior example had a compliance account balance of 4,500,000 allowances, the following represents the allowances which may be purchased without exceeding the holding limit:

$$\text{Maximum Number of Allowances Held} = 15,717,500 + 4,000,000 - 4,500,000 = 15,217,500 \text{ allowances.}$$

Pursuant to article 62 of the Québec regulation, the Minister will record emissions units awarded after a sale by mutual agreement of the Minister in entities' compliance accounts.

IV. AUCTION ADMINISTRATOR APPLICATION OF THE BID EVALUATION CRITERIA

Submitted bids that contain bid quantities in excess of the holding limit or have a maximum value in excess of the bid guarantee will be rejected, in bundles of 1,000 emissions units, until all bid limitations are met. Only that portion of the bid quantity that exceeds one or more limit will be rejected, not the entire bid quantity and rejecting first in the lowest-priced category submitted bids. “Qualified bids” are the bids that remain after the submitted bids have been evaluated and reduced to meet all limits.

For example, if the bid guarantee limitation is satisfied by the purchase of no more than 10,000 allowances and the holding limit is satisfied by the purchase of no more than 25,000 allowances, the qualified bid is less than or equal to 10,000 allowances. Only qualified bids are used in the reserve sale settlement process. Determination of qualified bids occurs after the bidding window has been closed and before the final bid fulfillment and purchase determinations are made.

A. Bid Fulfillment

Starting with emissions units in the highest-priced category (Category C), bids will be evaluated for entities that submit bids to the highest-priced category. Given that each category contains a fixed number of emissions units, there are two potential outcomes for the sale of emissions units within each category:

- The number of qualified bid emission units is equal to or lower than the quantity of emission units that are available in a given category. Emissions units are divided amongst bidders in accordance with qualified bids. If the quantity of qualified bids is equal to the number of bids submitted, all bids are filled and no emissions units remain in the category.
- The quantity of qualified bids exceeds the quantity of emissions units in a given category. This will result in the tiebreaker process under which emissions units are sold based on each bidder’s proportion of all qualified bids:
 - The Auction Administrator will allocate emissions units to entities based on their share of qualified bids submitted to that category by dividing the quantity of each entity’s bids by the total number of qualified bids submitted for that category; Each entity is awarded emissions units based on its share times the number of emissions units available for sale in the category, rounded down to the nearest whole allowance;
 - If there are emissions units remaining as a result of rounding down, those emissions units are awarded to entities by assigning a random number to

each entity. The remaining emissions units are awarded to entities starting with the lowest assigned random number and proceeding to the next higher random number until all remaining emissions units are awarded.

Example 3: Bid Fulfillment with a Tiebreaker

Examples 3, 4, and 5 represent one sale by mutual agreement of the Minister across Categories C, B, and A, respectively. These examples utilize the bid schedules for Entities 1, 2, and 3 in **Table 1** and the bid guarantees in Example 1. In this example, the supply of emissions units in each category is 1,000 bid lots, equal to 1,000,000 emissions units. Example 3 shows the settlement of a sale by mutual agreement of the Minister when there is an excess demand for emissions units in a category. It shows a tiebreaker in Category C, but the tiebreaker methodology is applicable to any category.

Table 2 presents the cumulative bids of the three entities for Category C. **These bids are qualified bids and do not violate the holding limit or bid guarantee for each of the entities.** Each entity has submitted a bid guarantee amount sufficient to cover all bids.

Table 2: Category C Bid Fulfillment with a Tiebreaker

| Entity Name | Category Price | Bid Lots | Bid Emissions Units | Proportion | Emissions Units Sold |
|--------------|----------------|--------------|---------------------|-------------|----------------------|
| 1 | \$66.71 | 500 | 500,000 | 0.34482759 | 344,827 |
| 2 | \$66.71 | 750 | 750,000 | 0.51724138 | 517,241 |
| 3 | \$66.71 | 200 | 200,000 | 0.13793103 | 137,932 |
| Total | | 1,450 | 1,450,000 | 1.00 | 1,000,000 |

Since the quantity of qualified bids is 1,450,000 emissions units and only 1,000,000 units are available for sale from Category C, a tiebreaker procedure is required. Each entity is sold emissions units as a proportion of their qualified bids to the total quantity of qualified bids submitted to the oversubscribed category. For example, Entity 1’s qualified bid is 500,000 emissions units and its proportion to the total quantity of qualified bids is $500,000/1,450,000 = 0.34482759$. The proportion is then multiplied by the number of emissions units available and rounded down to the nearest whole unit, in this case, $0.34482759 \times 1,000,000 = 344,827$ emissions units.

The rounding down of emissions units results in 999,999 total emissions units sold. To sell the residual emissions unit, each entity is assigned a random number and the emissions unit is awarded to the entity with the lowest random number. In this example, Entity 3 is assigned the lowest random number and receives the residual emissions unit (changing the number of units sold to Entity 3 from 137,931 to 137,932).

The total number of emissions units sold in Category C and the resulting bid cost of each entity is as follows:

- Entity 1 – 344,827 emissions units at a total cost of \$23,003,409.17;
- Entity 2 – 517,241 emissions units at a total cost of \$34,505,147.11;
- Entity 3 – 137,932 emissions units at a total cost of \$9,201,377.01⁵.

As mentioned, this example shows a tiebreaker in Category C, but the tiebreaker methodology is applicable to any category. When all the bids are qualified bids and do not violate the holding limit or bid guarantee for each of the entities, this process is exactly the same for Category B and Category A emission units. Though, since any exceeding bid must be removed from the lowest-price category, the individual evaluation of each category begins with the highest-priced moving to the lowest-priced category.

After completing the sale of the highest-price category, the Auction Administrator will proceed to Category B and finally to Category A. Emissions units purchased in Category C reduce the units a participant may acquire in Category B before exceeding its holding limit. The total cost of emissions units purchased in Category C is deducted from the entity's bid guarantee, reducing the remaining bid guarantee that can be applied to subsequent category sales. Thus, evaluation of submitted bids in Category B and A is based on the remaining bid guarantee and emissions units that may be acquired before exceeding the holding limit.

B. Applying the Holding Limit and Bid Guarantee

Example 4: Holding Limit Applied With Respect to Bids Detailed in Table 1 and Data in Table 3

The maximum number of emissions units that can be held by any entity is a function of the holding limit and an entity's limited exemption. In this example, the available space within an entity's holding limit is defined as the maximum number of emissions units that can be purchased by an entity at the sale by mutual agreement of the Minister while in compliance with the holding limit. These emissions units, denoted as "Holding Limit Cap" in Table 3, indicate how many emissions units a participant may acquire before exceeding its holding limit.

The cap for each entity can be determined based on the holding limit, its limited exemption, and its current emission units holding in its general and compliance accounts.

Table 3 outlines the holding limit cap calculation for the three entities (1, 2, and 3) given each entity has a limited exemption of 4,000,000 emissions units and presents the number

⁵ For the rest of this document, the total cost for emission units will be truncated and presented to the dollar.

of emissions units that can be purchased at the sale by mutual agreement of the Minister by each entity. Emissions units purchased are placed directly into the compliance account of an entity and are subject to the current vintage holding limit.

Since only emitters whose general account does not contain any emission units that can be used to cover GHG emissions for the current compliance period are eligible for a sale of emission units by mutual agreement all the emission units of Entities 1, 2 and 3 were moved to their compliance account.

Table 3: Limited Exemption and Maximum Units that Can Be Purchased

| Entity Name | Current Vintage Holding Limit | Limited Exemption | Compliance Account | General Account | Holding Limit Cap |
|-------------|-------------------------------|-------------------|--------------------|-----------------|-------------------|
| 1 | 15,717,500 | 4,000,000 | 18,717,500 | 0 | 1,000,000 |
| 2 | 15,717,500 | 4,000,000 | 18,717,500 | 0 | 1,000,000 |
| 3 | 15,717,500 | 4,000,000 | 19,017,500 | 0 | 700,000 |

Using the bid schedule in **Table 1**, this example presents the outcome of the sale by mutual agreement of the Minister after imposing holding limit caps for all three entities.

It is easy to realize that the results of the Category C sale are unchanged as no entity exceeded its holding limit. For example, Entity 2 has space for 1,000,000 emissions units within the holding limit cap but its Category C bid is only 750,000 units. As was the case above, Entity 3 is sold the residual emissions unit based on the random number draw (changing the number of units sold to Entity 3 from 137,931 to 137,932).

After the sale of Category C emissions units, the number of remaining purchasable units for each entity is:

- Entity 1 – 655,173 emissions units;
- Entity 2 – 482,759 emissions units;
- Entity 3 – 562,068 emissions units.

Table 4: Category B with Holding Limit Applied

| Entity Name | Category B Price | Bid Lots | Qualified Emissions Units | Emissions Units Sold |
|--------------|------------------|------------|---------------------------|----------------------|
| 1 | 60.04 | 300 | 300,000 | 300,000 |
| 2 | 60.04 | 500 | 482,000 | 482,000 |
| 3 | 60.04 | 100 | 100,000 | 100,000 |
| Total | | 900 | 882,000 | 882,000 |

Table 5 shows that Entity 2’s scheduled Category B bid of 500,000 emissions units (500 bid lots) violates the holding limit as the entity has a remaining holding limit cap of 482,759 emissions units following the Category C sale. Submitted bids that contain bid quantities in excess of the holding limit will be rejected, in bundles of 1,000 emissions units, until the limit is met. Thus, only the portion of the bid that is in violation will be rejected, not the entire bid. In the Category B sale, Entity 2 is sold 482,000 allowances, its maximum qualified Category B bid when rounded down to the nearest lot.

The total number of Category B emissions units sold and the resulting total cost for each entity is as follows:

- Entity 1 – 300,000 emissions units at a total cost of \$41,015,409;
- Entity 2 – 482,000 emissions units at a total cost of \$63,444,427;
- Entity 3 – 100,000 emissions units at a total cost of \$15,205,377.

After the sale of Category B emissions units, the remaining emissions units that can be purchased by each entity are:

- Entity 1 – 355,173 emissions units;
- Entity 2 – 759 emissions units;
- Entity 3 – 462,068 emissions units.

Table 5: Category A with Holding Limit Applied

| Entity Name | Category A Price | Bid Lots | Qualified Emissions Units | Emissions Units Sold |
|--------------|------------------|------------|---------------------------|----------------------|
| 1 | 53.38 | 100 | 100,000 | 100,000 |
| 2 | 53.38 | 300 | 0 | 0 |
| 3 | 53.38 | 50 | 50,000 | 50,000 |
| Total | | 450 | 150,000 | 150,000 |

Table 5 shows the results for the sale of Category A emissions units. Entity 2 cannot participate in the final category of the sale, as any additional purchase of a lot of 1,000 emissions units would exceed its holding limit. Entities 1 and 3 have their entire Category A qualified bids fulfilled. After all qualified Category A bids are filled, there are 968,000 emissions units that will remain in the government’s reserve account.

The sale by mutual agreement of the Minister is complete after the Category A sale. **Table 6** shows the total number of emissions units and the total cost for each entity.

Table 6: Total Emissions Units Sold to Entities with Holding Limit Applied

| Entity Name | Category Price | Emissions Units Sold | Total Purchase Cost |
|-------------------------|----------------|----------------------|---------------------|
| 1 | 66.71 | 344,827 | \$23,003,409 |
| 1 | 60.04 | 300,000 | \$18,012,000 |
| 1 | 53.38 | 100,000 | \$5,338,000 |
| Total – Entity 1 | | 744,827 | \$46,353,409 |
| 2 | 66.71 | 517,241 | \$34,505,147 |
| 2 | 60.04 | 482,000 | \$28,939,280 |
| 2 | 53.38 | 0 | 0 |
| Total – Entity 2 | | 999,241 | \$63,444,427 |
| 3 | 66.71 | 137,932 | \$9,201,377 |
| 3 | 60.04 | 100,000 | \$6,004,000 |
| 3 | 53.38 | 50,000 | \$2,669,000 |
| Total – Entity 3 | | 287,932 | \$17,874,377 |

Example 5: Bid Guarantee Applied With Respect to Bids Presented in Table 1

Assume for Example 5 that Entities 1, 2, and 3 have submitted the bid guarantee amounts outlined in Table 7 to correspond with their bid schedules presented in Table 1. All submitted bids are within the holding limit for each entity.

Table 7: Bid Guarantees for Entities 1, 2 and 3

| Entity Name | Bid Guarantee |
|-------------|---------------|
| 1 | \$35,000,000 |
| 2 | \$67,000,000 |
| 3 | \$15,000,000 |

The results of the Category C sale, shown in Table 8, are unchanged as there is no bid guarantee violation. Entity 3 is again awarded the residual allowance (changing the number of allowances sold to it from 137,931 to 137,932).

Table 8: Category C with Bid Guarantee Applied

| Entity Name | Category C Price | Bid Lots | Qualified Emissions Units | Proportion | Emissions Units Sold | Total Purchase Cost |
|--------------|------------------|--------------|---------------------------|-------------|----------------------|---------------------|
| 1 | \$66.71 | 500 | 500,000 | 0.34482759 | 344,827 | 23 003 409 |
| 2 | \$66.71 | 750 | 750,000 | 0.51724138 | 517,241 | 34 505 147 |
| 3 | \$66.71 | 200 | 200,000 | 0.13793103 | 137,932 | 9 201 444 |
| Total | | 1,450 | 1,450,000 | 1.00 | 1,000,000 | |

The total purchase cost of emissions units and remaining bid guarantee amounts for each entity are:

- Entity 1 – \$23,003,409 total purchase cost with a remaining bid guarantee amount of \$11,996,590;
- Entity 2 – \$34,505,147 total purchase cost with a remaining bid guarantee amount of \$32,494,852;
- Entity 3 – \$9,201,444 total purchase cost with a remaining bid guarantee amount of \$5,798,556.

Given the bid guarantees in Table 7, the results of the Category B sale change as Entity 1 exceeded its bid guarantee limitation and can spend no more than \$11,996,590; at \$60.04 per emissions unit, it can purchase no more than 199,809 units ($\$11,996,590 / \$60.04 = 199,809$ units, rounded down to the nearest thousand units to 199,000 units). Therefore, Entity 1’s qualified Category B bid is reduced to 199,000 emissions units.

Table 9: Category B with Bid Guarantee Applied

| Entity Name | Category B Price | Bid Lots | Qualified Emissions Units | Emissions Units Sold |
|--------------|------------------|------------|---------------------------|----------------------|
| 1 | 60.04 | 300 | 199,000 | 199,000 |
| 2 | 60.04 | 500 | 500,000 | 500,000 |
| 3 | 60.04 | 100 | 96,000 | 96,000 |
| Total | | 900 | 795,000 | 795,000 |

The total purchase cost of emissions units in the Category B sale and remaining bid guarantee amounts for each entity are:

- Entity 1 – \$11,947,960 total purchase cost with a remaining bid guarantee amount of \$48,630;
- Entity 2 – \$30,020,000 total purchase cost with a remaining bid guarantee amount of \$2,474,852;
- Entity 3 – \$5,763,840 total purchase cost with a remaining bid guarantee amount of \$34,716.

Entity 1 and Entity 3 cannot purchase additional emissions units from Category A as any additional purchase lots of 1,000 units at the category price would exceed the value of the entity’s bid guarantee.

Table 10: Category A with Bid Guarantee Applied

| Entity Name | Category A Price | Bid Lots | Qualified Emissions Units | Emissions Units Sold |
|--------------|------------------|------------|---------------------------|----------------------|
| 1 | 53.38 | 100 | 0 | 0 |
| 2 | 53.38 | 300 | 46,000 | 46,000 |
| 3 | 53.38 | 50 | 0 | 0 |
| Total | | 450 | 46,000 | 46,000 |

Entity 1 has no qualified Category A bid lots and thus is not sold any qualified emissions units. The number of emissions units awarded to Entity 2 is reduced because its bids resulted in its bid guarantee being exceeded. Finally, Entity 3 has no qualified Category A bid lots and thus is not sold any qualified emissions units.

Table 11 presents the total number of emissions units sold from all three tiers and the total purchase cost for each entity.

Table 11: Total Emissions Units Sold by Entity with Bid Guarantee Applied

| Entity Name | Category | Category Price | Emissions Units Sold | Total Purchase Cost |
|-------------------------|----------|----------------|----------------------|---------------------|
| 1 | A | 53.38 | 0 | 0 |
| 1 | B | 60.04 | 199,000 | \$11,947,960 |
| 1 | C | 66.71 | 344 827 | \$23,003,409 |
| Total – Entity 1 | | | 543,827 | \$34,951,369 |
| 2 | A | 53.38 | 46,000 | \$2,455,480 |
| 2 | B | 60.04 | 500,000 | \$30,020,000 |
| 2 | C | 66.71 | 517,241 | \$34,505,147 |
| Total – Entity 2 | | | 1,063,241 | \$66,980,627 |
| 3 | A | 53.38 | 0 | 0 |
| 3 | B | 60.04 | 96,000 | \$5,763,840 |
| 3 | C | 66.71 | 137,932 | \$9,201,444 |
| Total – Entity 3 | | | 233,932 | \$14,965,284 |